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ROTOR STRUCTURE WITH DOUBLE CAGE FOR IMPROVED SYNCHRONOUS CAPABILITY OF LINE-START PERMANENT MAGNET SYNCHRONOUS MOTORS

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Abstract

Line start permanent magnet synchronous motors (LSPMSMs) have a problem of synchronization. In this paper the rotor of LSPMSM with double cage is proposed to improve synchronous capability of the motor. Key factors concerning the starting performance and synchronous capability of LSPMSM are given, and the conflict relationship between starting performance and synchronous capability is analyzed. The performances of starting and synchronization of the motors with singe cage rotor and double cage rotor are compared and analyzed based on the conflict. The results obtained for the motor with double cage rotor can improve the synchronous capability within the wide range. The principal results of the paper provide the reliable theoretical propositions for improving LSPMSM performance. References 15, figures 11, tables 3.

Key words: LSPMSM, finite-element method, double cage rotor, starting performance, synchronous capability.

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